I claim:

1. Hydropower generation apparatus comprising:

a first chamber having at least one inlet for introducing water therein and at least one outlet for evacuating water therefrom;

a first buoyant object located in said first chamber, said first buoyant object communicating with a power extraction mechanism for extracting generated power;

a second chamber having at least one inlet for introducing water therein and at least one outlet for evacuating water therefrom;

a second buoyant object located in said second chamber, said second buoyant object communicating with said power extraction mechanism;

said first chamber having at least one inlet selectively fluidly connected to an outlet of said second chamber;

said second chamber having at least one inlet selectively fluidly connected to an outlet of said first chamber;

wherein introducing water into said first chamber causes said first buoyant object to rise in said first chamber thereby causing an upstroke to generate power;

wherein evacuating water from said second chamber causes said second buoyant object to fall in said second chamber thereby causing a downstroke to generate power;

wherein introducing water into said second chamber causes said second buoyant object to rise in said second chamber thereby causing an upstroke to generate power;

wherein evacuating water from said first chamber causes said first buoyant object to fall in said first chamber thereby causing a downstroke to generate power;

wherein said first chamber is capable of selectively evacuating water to said second chamber to assist in an upstroke of said second buoyant object in said second chamber, and said first chamber is capable of selectively evacuating water from said first chamber to a lower water body; and

wherein said second chamber is capable of selectively evacuating water to said first chamber to assist in an upstroke of said first buoyant object in said first chamber, and said second chamber is capable of selectively evacuating water from said second chamber to a lower water body.

2. Hydropower generation apparatus according to claim 1 wherein at least one inlet each of said first and second chambers is fluidly connected to an upper water body, said upper water body being located at an elevation higher than said chambers; and at least one outlet each of said first and second chambers is fluidly connected to a lower water body, said lower water body being located at an elevation lower than said chambers.

3. Hydropower generation apparatus according to claim 2 wherein power is generated by said upstrokes by means of rapid introduction of water through said inlets sufficient to cause a positive upward buoyant force on said buoyant objects up to and including near instantaneous flooding of said chambers; and power is generated by said downstrokes of said first and said second buoyant objects through rapid evacuation of water from said chambers via said outlets sufficient to cause a positive downward gravitational force up to and including near instantaneous evacuation of said chambers.

4. Hydropower generation apparatus according to claim 2 further including means for guiding said first and second buoyant objects in vertical motion during said upstrokes and downstrokes in said first and said second chambers respectively.

5. Hydropower generation apparatus according to claim 2 wherein said first and said second buoyant objects weigh less than or equal to the volume of water required to raise said buoyant objects through a lift distance between a surface of said lower water body and a surface of said upper water body.

6. Hydropower generation apparatus according to claim 2 wherein said first and second buoyant objects are so sized and so designed such that sufficient freeboard is maintained by said buoyant objects within said first and said second chambers respectively thereby to substantially prevent water from contacting a top surface of said

buoyant objects and thus prevent water from obstructing said buoyant objects during said upstrokes.

7. Hydropower generation apparatus according to claim 2 wherein space clearances between said first and second buoyant objects in said first and second chambers, respectively, are minimized in order to minimize the amount of water required in order to produce positive forces on said buoyant objects in said chambers.

8. Hydropower generation apparatus according to claim 2 further including a plurality of two-way valves selectively fluidly connecting said first and said second chambers respectively.

9. Hydropower generation apparatus according to claim 8 further including a manifold located between said first and said second chambers, said manifold being fluidly connected to said first and said second chambers via said plurality of two-way valves.

10. Hydropower generation apparatus according to claim 9 wherein said plurality of two-way vales are selectively fluidly connected for directing water back and forth between said first chamber and said second chamber, via said manifold, thereby to introduce water into one of said chambers when the other of said chambers is being evacuated of water thereby to enhance said upstrokes and downstrokes of said chambers simultaneously respectively.

11. Hydropower generation apparatus according to claim 9 wherein said manifold includes at least one drainage valve for draining water into said lower water body and at least one filling valve selectively fluidly connected to said upper water body.

12. Hydropower generation apparatus according to claim 2 wherein said first and said second buoyant objects each include ballast compartments and ballast valves for opening and closing said ballast compartments, wherein said ballast valves of said ballast

compartments are operable to take on water in order to increase the weight of said first and said second buoyant objects during their downstrokes, respectively, and said ballast valves are operable to evacuate water from said ballast compartments in order to decrease the weight of said first and said second buoyant objects during their upstrokes, respectively.

13. Hydropower generation apparatus according to claim 12 wherein said ballast compartments are operable to take on water at or near a pinnacle of an upstroke thereby to maximize energy generated in said downstrokes and are operable to release water at or near a bottom of said downstroke thereby to maximize energy generated in said upstroke.

14. Hydropower generation apparatus according to claim 12 wherein power is generated by said upstrokes by means of rapid introduction of water through said inlets sufficient to cause a positive upward buoyant force on said buoyant objects up to and including near instantaneous flooding of said chambers; and power is generated by said downstrokes of said first and said second buoyant objects through rapid evacuation of water from said chambers via said outlets sufficient to cause a positive downward gravitational force up to and including near instantaneous evacuation of said chambers.

15. Hydropower generation apparatus according to claim 12 further including means for guiding said first and second buoyant objects in vertical motion during said upstrokes and downstrokes in said first and said second chambers respectively.

16. Hydropower generation apparatus according to claim 12 wherein said first and said second buoyant objects weigh less than or equal to the volume of water required to raise aid buoyant objects through a lift distance between a surface of said lower water body and a surface of said upper water body.

17. Hydropower generation apparatus according to claim 12 wherein said first and second buoyant objects are so sized and so designed such that sufficient freeboard is maintained by said buoyant objects within said first and said second chambers

respectively thereby to substantially prevent water from contacting a top surface of said buoyant objects and thus prevent water from obstructing said buoyant objects during said upstrokes.

18. Hydropower generation apparatus according to claim 12 wherein space clearances between said first and second buoyant objects in said first and second chambers, respectively, are minimized in order to minimize the amount of water required in order to produce positive forces on said buoyant objects in said chambers.

19. Hydropower generation apparatus according to claim 12 further including a plurality of one-way and two-way valves selectively fluidly connecting said first and said second chambers respectively.

20. Hydropower generation apparatus according to claim 12 further including a manifold located between said first and said second chambers, said manifold being fluidly connected to said first and said second chambers via said plurality of one-way and two-way valves.

21. Hydropower generation apparatus according to claim 20 wherein said plurality of one-way valves and two-way vales are selectively fluidly connected for directing water back and forth between said first chamber and said second chamber, via said manifold, thereby to introduce water into one of said chambers when the other of said chambers is being evacuated of water thereby to enhance said upstrokes and downstrokes of said chambers simultaneously respectively.

22. Hydropower generation apparatus according to claim 21 wherein said manifold includes at least one drainage valve for draining water into said lower water body and at least one filling valve selectively fluidly connected to said upper water body.

23. Hydropower generation apparatus comprising:

at least one chamber having at least one inlet for introducing water therein and at least one outlet for evacuating water therefrom;

a buoyant object located in said chamber, said buoyant object communicating with a power extraction mechanism for extracting generated power;

wherein introducing water into said chamber causes said buoyant object to rise in said chamber thereby causing an upstroke to generate power;

wherein evacuating water from said chamber causes said buoyant object to fall in said chamber thereby causing a downstroke to generate power;

wherein said buoyant object includes at least one ballast compartment and at least one ballast valve for opening and closing said ballast compartment, wherein said ballast valve of said ballast compartment is operable to take on water in order to increase the weight of said buoyant object during said downstroke and said ballast valve is operable to evacuate water from said ballast compartment in order to decrease the weight of said buoyant object during said upstroke.

24. Hydropower generation apparatus according to claim 2 further including a plurality of one-way valves selectively fluidly connecting said first and said second chambers respectively.

25. Hydropower generation apparatus according to claim 24 further including a manifold located between said first and said second chambers, said manifold being fluidly connected to said first and said second chambers via said plurality of one-way valves.

26. Hydropower generation apparatus according to claim 2 further including a plurality of one-way and two-way valves selectively fluidly connecting said first and said second chambers respectively.

27. Hydropower generation apparatus according to claim 26 further including a manifold located between said first and said second chambers, said manifold being

fluidly connected to said first and said second chambers via said plurality of one-way and two-way valves.